Electronic TUBES

# 6BZ7—4BZ7

## TWIN TRIODE

### FOR VHF CASCODE AMPLIFIER APPLICATIONS

## DESCRIPTION AND RATING

The 6BZ7 is a miniature, medium-mu twin triode designed primarily for use as a cascode radio-frequency amplifier in very-high-frequency television tuners. In this application, its performance is characterized by high gain and low noise figure. An internal shield provides isolation between the two triode sections.

Except for heater ratings, the 4BZ7 is identical to the 6BZ7. In addition, as a result of its controlled heater warm-up characteristic, the 4BZ7 is especially suited for use in television receivers that employ 600-milliampere, series-connected heaters.

### GENERAL

**ELECTRICAL**

| | 4BZ7 | | 6BZ7 | |
|---|---|---|---|---|
| Cathode—Coated Unipotential | | | | |
| Heater Voltage, AC or DC | 4.2 | | 6.3 | Volts |
| Heater Current | 0.6 | | 0.4 | Amperes |
| Heater Warm-up Time* | 11 | | .... | Seconds |
| Direct Interelectrode Capacitances† | Section 1 | | Section 2 | |
| Grid to Plate | 1.2 | | 1.2 | μμf |
| Input | 2.6 | | .... | μμf |
| Output | 1.2 | | .... | μμf |
| Heater to Cathode | 2.6 | | 2.6 | μμf |
| Plate to Plate, maximum | | 0.01 | | μμf |
| Plate (Section 2) to Plate and Grid (Section 1), maximum | | 0.024 | | μμf |
| Plate to Cathode | 0.12 | | 0.12 | μμf |
| Grounded-Grid Input | .... | | 5.0 | μμf |
| Grounded-Grid Output | .... | | 2.2 | μμf |

**MECHANICAL**

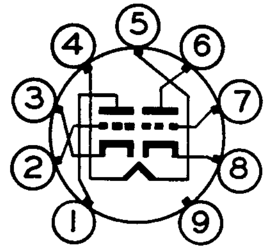
Mounting Position—Any
Envelope—T-6½, Glass
Base—E9-1, Small Button 9-Pin

### MAXIMUM RATINGS

**DESIGN-CENTER VALUES, EACH SECTION**

| | | |
|---|---|---|
| Plate Voltage | 250‡ | Volts |
| Plate Dissipation | 2.0 | Watts |
| DC Cathode Current | 20 | Milliamperes |
| Heater-Cathode Voltage | | |
| Heater Positive with Respect to Cathode | | |
| DC Component | 100 | Volts |
| Total DC and Peak | 200 | Volts |
| Heater Negative with Respect to Cathode | | |
| Total DC and Peak | 200‡ | Volts |
| Grid Circuit Resistance | 0.5 | Megohms |

**BASING DIAGRAM**



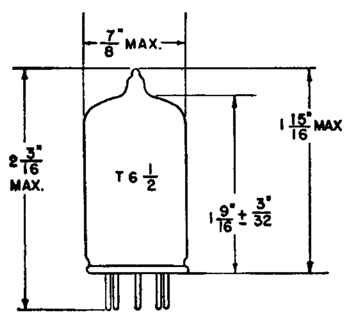

RETMA 9AJ

**TERMINAL CONNECTIONS**

Pin 1—Plate (Section 2)
Pin 2—Grid (Section 2)
Pin 3—Cathode (Section 2)
Pin 4—Heater
Pin 5—Heater
Pin 6—Plate (Section 1)
Pin 7—Grid (Section 1)
Pin 8—Cathode (Section 1)
Pin 9—Internal Shield

It is recommended that pin 9 be grounded.

**PHYSICAL DIMENSIONS**




RETMA 6-2

GENERAL ELECTRIC

Supersedes ET-T853, dated 4-54

## CHARACTERISTICS AND TYPICAL OPERATION

### CLASS A₁ AMPLIFIER, EACH SECTION

| | | |
|---|---|---|
| Plate Voltage | 150 | Volts |
| Cathode-Bias Resistor | 220 | Ohms |
| Amplification Factor | 36 | |
| Plate Resistance, approximate | 5300 | Ohms |
| Transconductance | 6800 | Micromhos |
| Plate Current | 10 | Milliamperes |
| Grid Voltage, approximate Ib = 100 Microamperes | −7 | Volts |

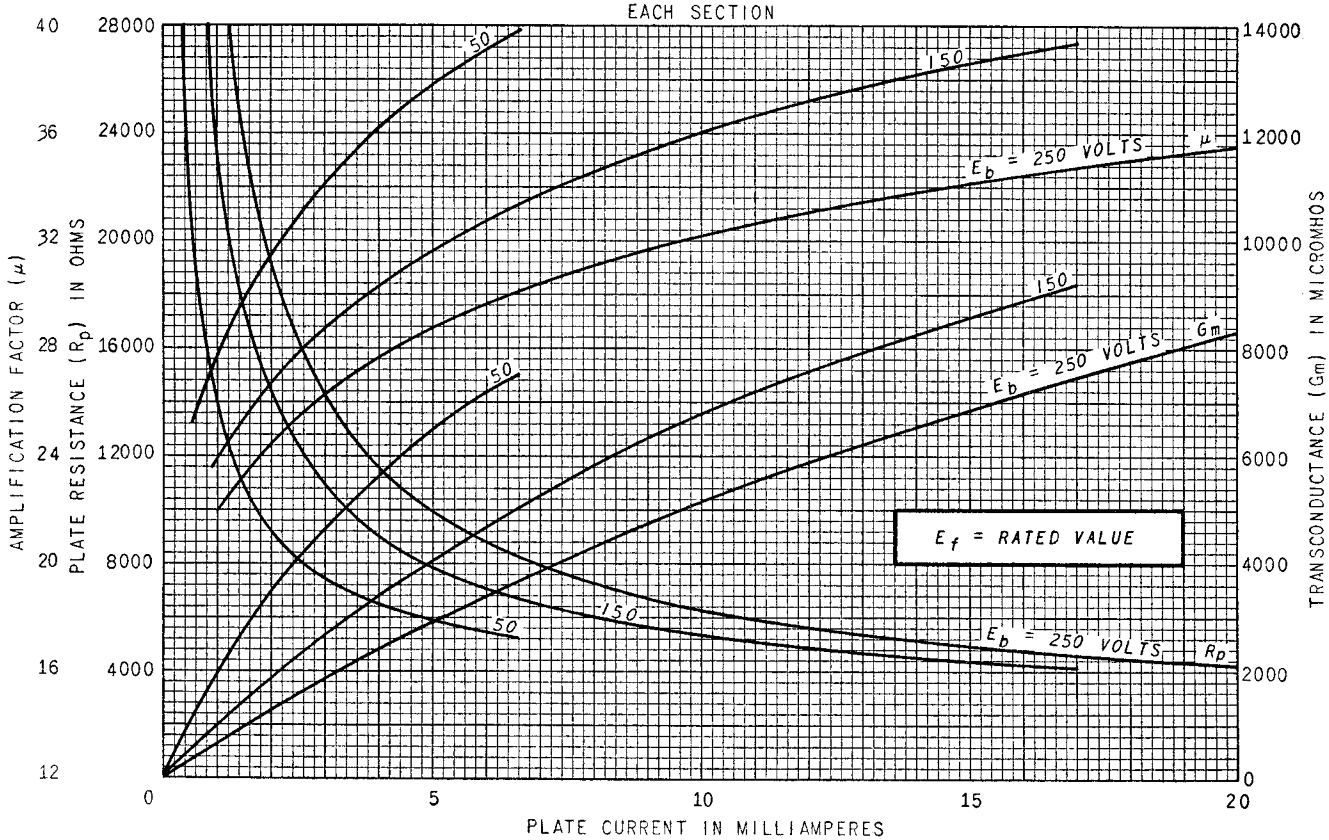
* The time required for the voltage across the heater to reach 80 percent of its rated value after applying 4 times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to 3 times the rated heater voltage divided by the rated heater current.

† With external shield (RETMA 315) connected to pin 9.

‡ When the tube is used as a cascode amplifier and the two sections are connected in series, this voltage may be as high as 300 volts maximum under cutoff conditions.

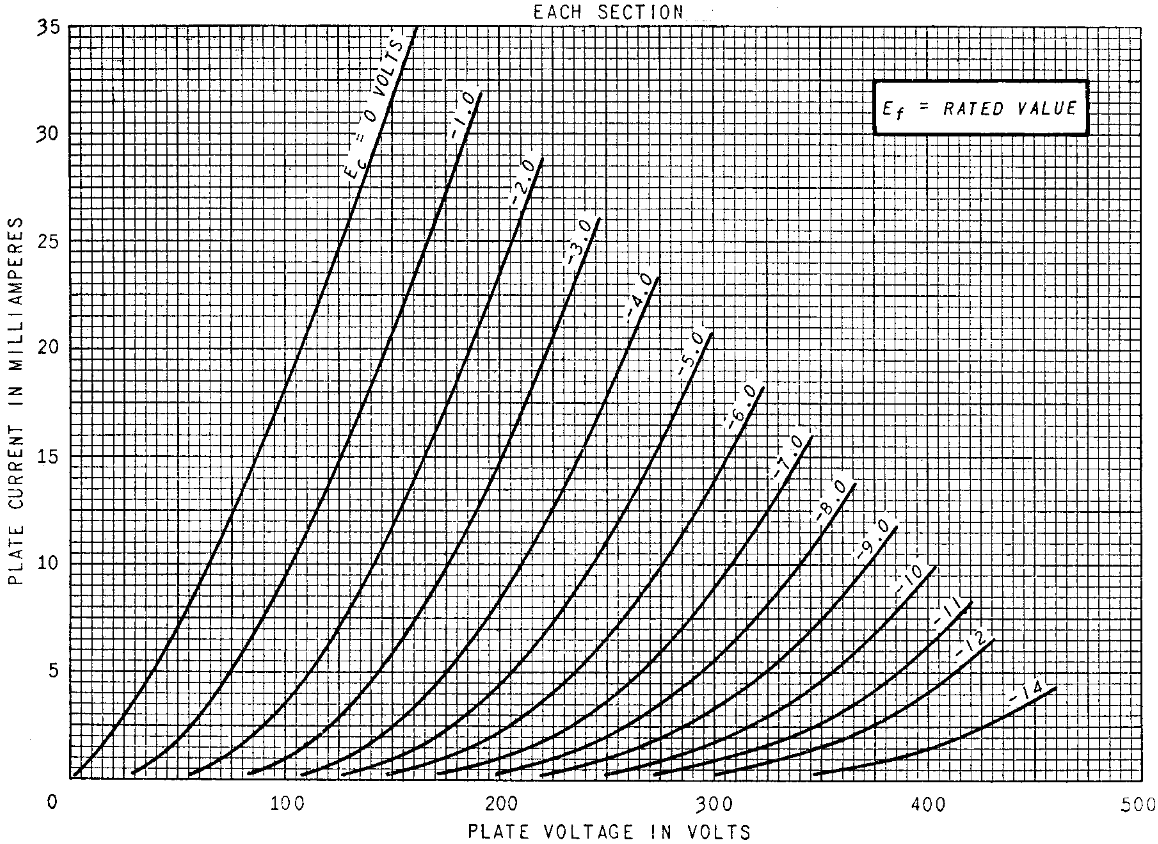
## AVERAGE CHARACTERISTICS

EACH SECTION



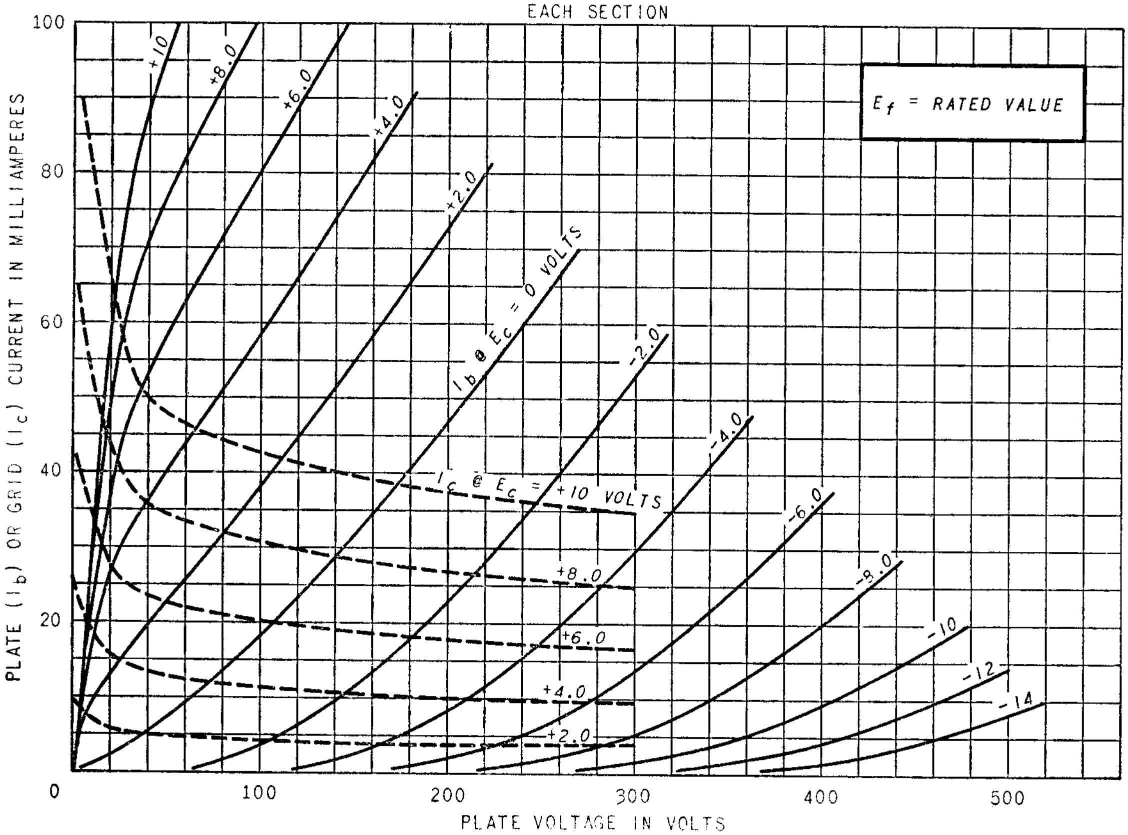
## AVERAGE PLATE CHARACTERISTICS

EACH SECTION



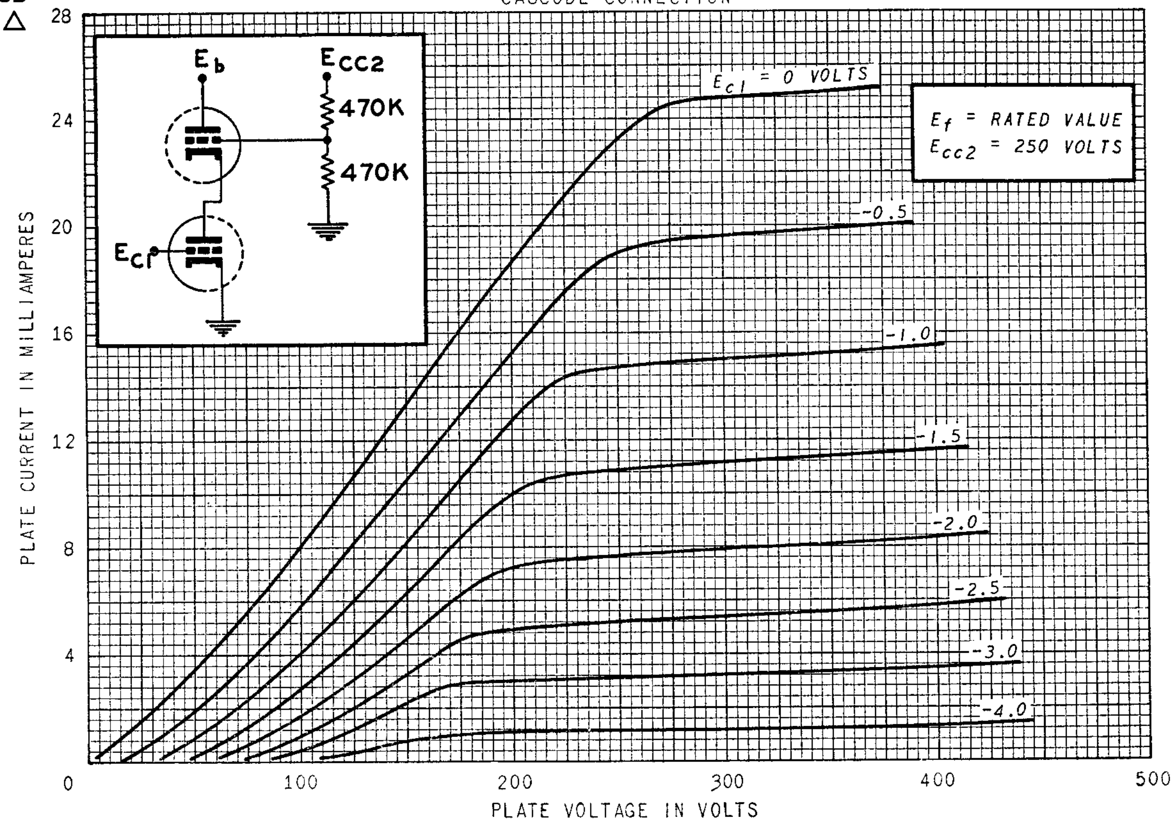

## AVERAGE PLATE CHARACTERISTICS

EACH SECTION



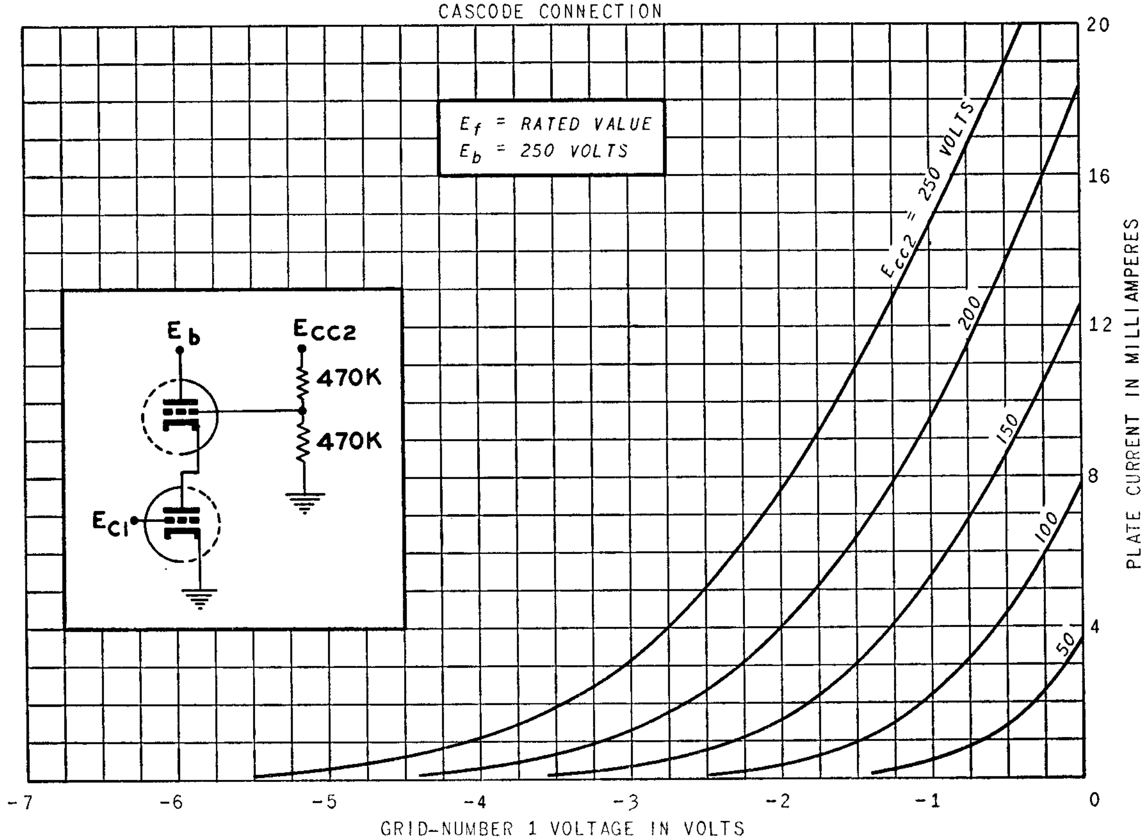
## AVERAGE PLATE CHARACTERISTICS

CASCODE CONNECTION




## AVERAGE TRANSFER CHARACTERISTICS

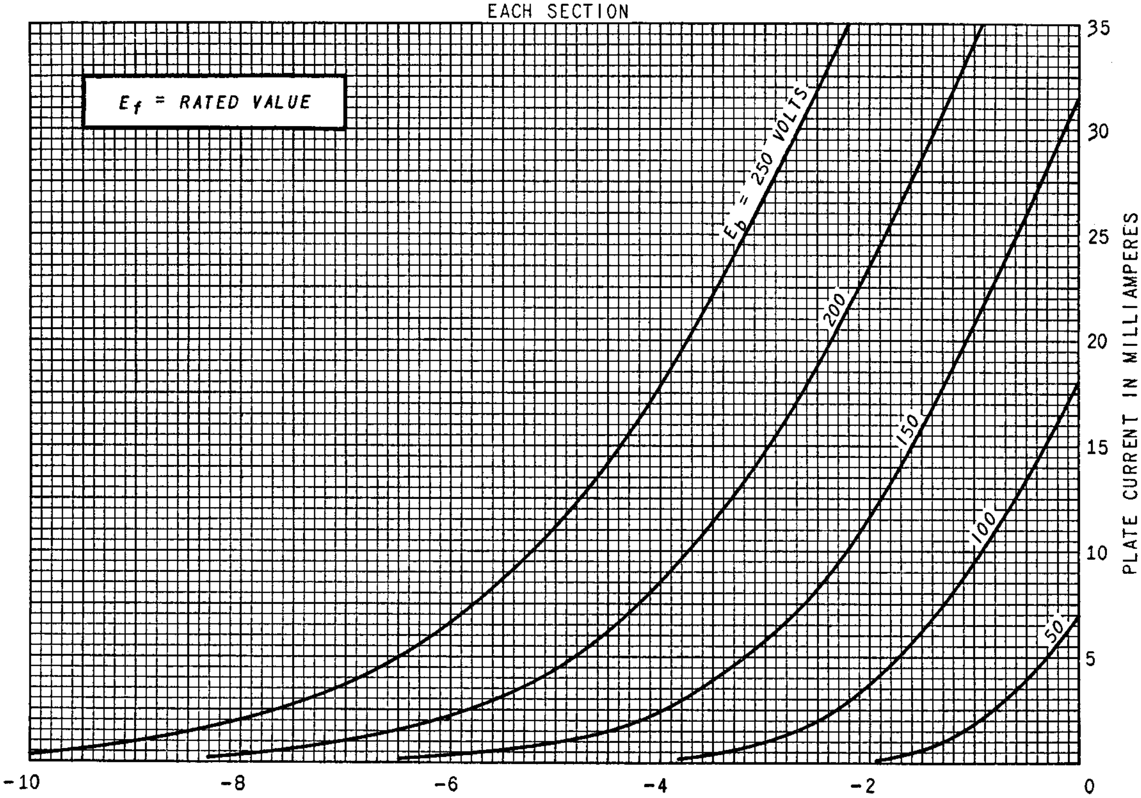
CASCODE CONNECTION




△ *Supersedes pages 3 and 4, dated 12-56*

## AVERAGE TRANSFER CHARACTERISTICS

EACH SECTION




## AVERAGE TRANSFER CHARACTERISTICS

CASCODE CONNECTION

